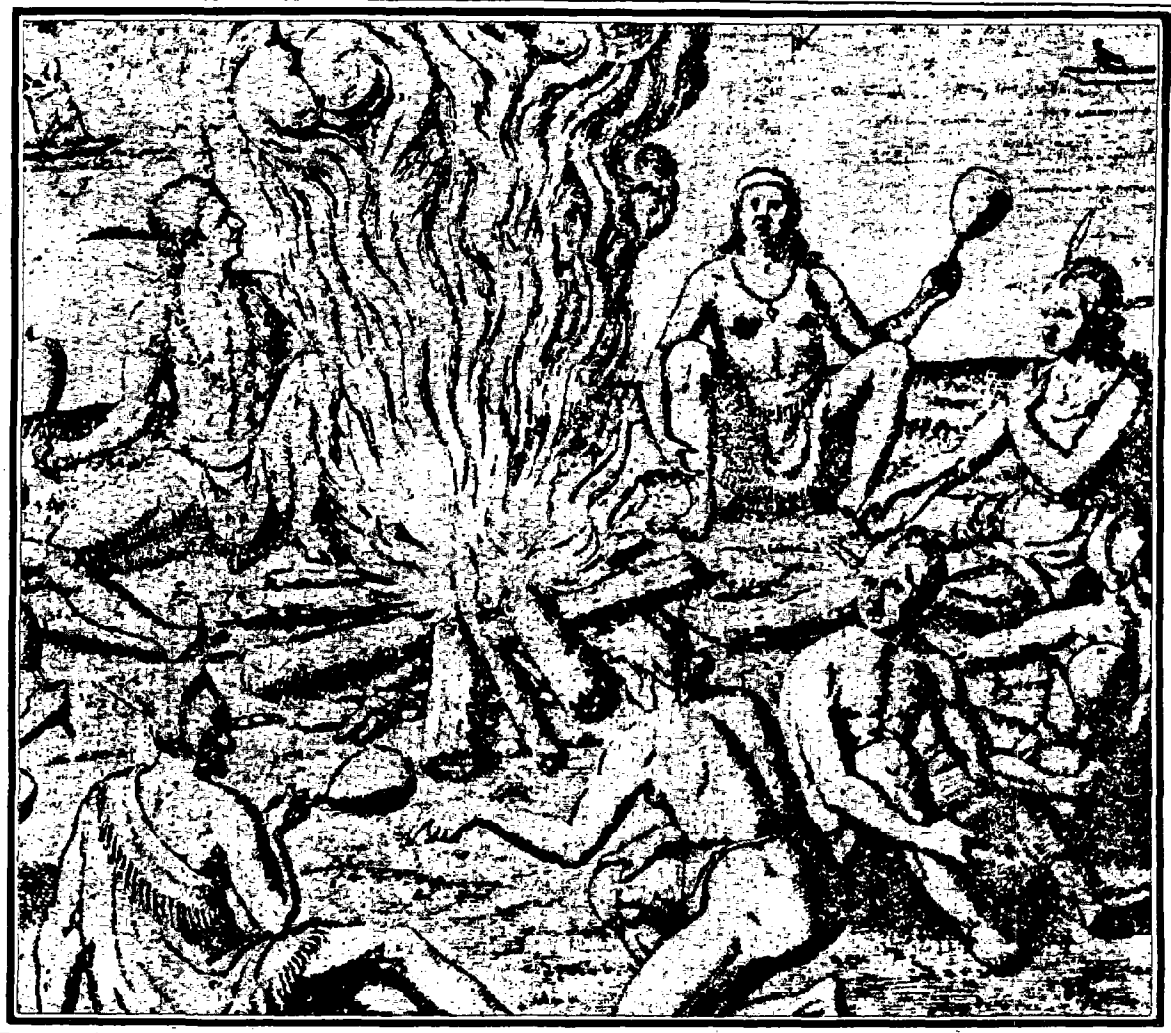
PREHISTORIC PEOPLES OF MARYLAND'S COASTAL PLAIN



MARYLAND DEPARTMENT OF NATURAL RESOURCES
TIDEWATER ADMINISTRATION
COASTAL RESOURCES DIVISION

NOVEMBER 1979

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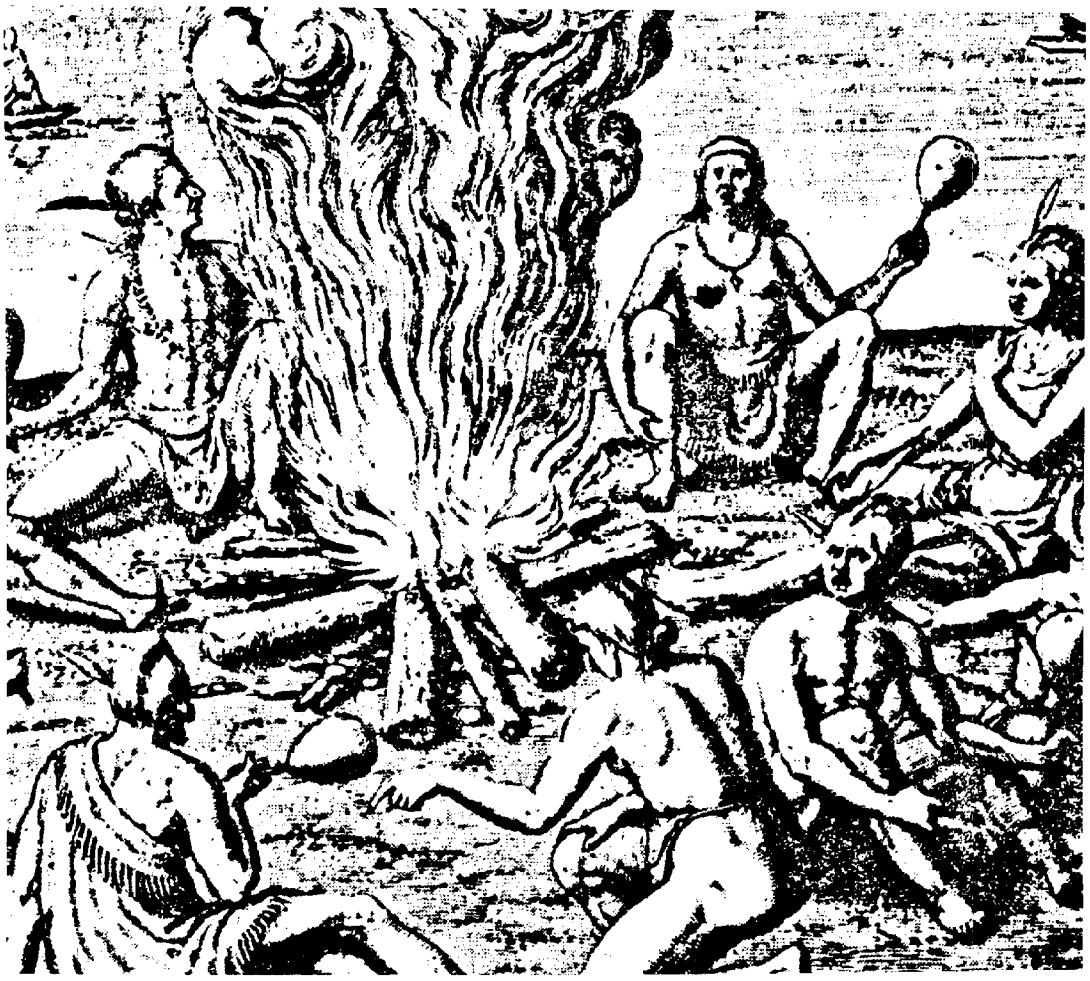

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CHAPTER 1
INTRODUCTION

Chapter 1

Introduction

Eastern North America has abundant prehistoric remains, particularly along the coastline. A variety of rich resources attracted early peoples—just as the coast now attracts modern populations. Sadly, modern land development practices in the coastal zone are rapidly disturbing and destroying prehistoric remains which are both irreplaceable and nonrenewable, resulting in an incalculable loss of our cultural and aesthetic heritage as well as a loss of scientific information (Dunnell ms.).

What are Prehistoric Resources?

Prehistoric resources are archeological remains which are composed of objects or modifications to the soil that owe some aspect of their form and/or location to human activities before recorded history. These remains, usually called artifacts, rest as individual objects on or in the soil, in groups, or in modified areas such as shell deposits.

Prehistoric remains result from early Native American life in Maryland. Historic remains result from the time of European exploration and settlement, left either by the Europeans or by the native groups they contacted. Thus, the remains of the last Native American cultures—those that disintegrated as a result of European contact—are termed historic here because some information on them is recorded as part of Maryland's earliest written history.

The Nature of Prehistoric Resources

Prehistoric resources have several characteristics, including that they are finite, fragile, unique, and systemic (Dincauze and Meyer 1975: 18-19). It is difficult to determine the number of prehistoric resources that once existed. This number would depend upon the scale at which the remains were conceived. Prehistoric artifacts are distributed across the landscape in varying densities, reflecting patterns of past land use. If we think of them as individual objects, they must number in the millions. However, if we think of them as groups of objects, they are much less numerous. Of course, there are certain kinds of resources, for example large, thick shell deposits in the Chesapeake Bay area, which may never have been very numerous and now are practically destroyed. Regardless of the scale at which we conceive prehistoric resources, they are finite. With continuing disturbance or destruction, the number decreases; none can be renewed because the cultures that created them have long since disappeared.

In addition to being finite, prehistoric resources are unique and systemic. Their uniqueness comes from the fact that they were deposited by particular past events that took place at specific times and places. But the events that created individual prehistoric resources were related to events taking place at other locations both before and after. Thus, prehistoric resources result from the subsistence and settlement patterns that past cultures developed in adapting to their natural environments.

The significance of prehistoric resources lies not merely in the objects themselves, but in their spatial relationships to each other and to the natural environment. For this reason, they must be considered extremely fragile. Because prehistoric artifacts rest on and in the soil, disturbing the soil destroys the evidence for prehistory—either by destroying the remains themselves or by altering their locational relationships with each other and the natural environment.

Thus, most of the meaning and usefulness of prehistoric resources depends on preserving the integrity of their locations. To be of enduring value, they must be left intact and undisturbed before they are studied. To be of the greatest value to scientific research, prehistoric resources must be carefully collected and recorded. Only in context can they contribute significantly to our understanding of the past.

Why are Prehistoric Resources Important?

Prehistoric resources can provide important information about past human activities; they can tell us what life was once like on the North American continent. For the thousands of years before European contact brought recorded history, prehistoric resources are the only record. Thus, these remains are of incalculable value in understanding cultural evolution that resulted in permanently settled agricultural towns in many places.

Archeological remains contain information on both the documented and undocumented past. For example, archeological excavations have provided information on early American colonial life at Jamestown and Williamsburg. But documented history covers no more than a few hundred of the 10,000 years that people have lived in the Maryland coastal zone. By studying archeological remains, we can learn how people adapted to the environment, to its changes, and to each other as well as learning how the activities of prehistoric people may have affected their environment. Through studies of prehistoric remains we can also gain a time perspective on the cultural processes operating on all human populations. Most important, we can learn more about our place in cultural evolution and in the natural world. Thus, we can better understand the present and we may be able to predict some aspects of the future through our studies of the past. In the words of Adan Treganza, "the archeologist transforms remnants into contemporary meaning, bringing the past into focus with the present, giving perspective to man, time, and the natural world" (Moratto 1970:1).

Prehistoric resources provide the *only* avenue for studying the lifeways that existed before recorded history. Information about the past is important to the heritage of our society and to our identification.

Archeological studies can help biologists and geologists in understanding the environment. For example, we have learned that interference with natural forest succession did not begin with European settlement. Rather, this interference was present during Native American occupation (Day 1953; Elder 1965; Heizer 1955; Lewis and Schweger 1973; Maxwell 1910). Studies like these can show the interaction between prehistoric cultures and their environments.

Data from archeological studies provides information relevant to the study of such diverse problems as the

health of prehistoric populations and changes in landforms in the past. This environmental information can help us predict the future as well as aiding in the manipulation of the present environment. As one ecologist has concluded:

> . . . an area which was wooded when first seen by white men was not necessarily primeval; . . . an area for which there is no record of cutting is not necessarily virgin; . . . a knowledge of local archeology and history should be part of the ecologist's equipment (Day 1953:343).

That prehistoric remains are an important public resource is reflected in the visitation figures for archeological parks. We go in great numbers to Mesa Verde, Colorado, and Cahokia, Illinois, to monuments such as Flint Ridge and the Newark Mounds in Ohio, and to countless museums throughout the United States. In addition, audio-visual programs about North America's prehistory consistently attract large audiences as do college courses in anthropology and prehistory.

The prehistoric resources of Maryland's coastal zone, particularly Chesapeake Bay, provide an important natural laboratory for studying the interactions between changes in environment and prehistoric cultures through time. Here, people witnessed and had to contend with a series of environmental changes. Fifteen thousand years ago, the Chesapeake Bay area was the valley of the ancestral Susquehanna River. As the continental glaciers melted, the sea rose, moving the Atlantic coastal zone westward, consequently flooding the Susquehanna River to create the Chesapeake Bay estuary.

Continuing sea level rise and shoreline evolution have greatly altered coastal environments and natural resources. When the Europeans arrived, they found native people with agricultural economies occupying much of the area. These early explorers and settlers recorded some information about the native cultures they encountered but their information is incomplete. How did prehistoric adaptions change through time and what relationship did these changes have with ongoing environmental changes? Only Maryland's prehistoric resources can answer these questions.

The Chesapeake Bay area was the scene of interaction between late Native American cultures and European culture. These late Native American people represented an environmental adaptation resulting from thousands of years of cultural change. Interaction between the two cultures produced trade, cooperation, and war. Among other things, the settlers learned to use corn, tobacco, and seafood, all extremely important to Maryland's economy. Cultural interaction also involved famous figures in Maryland's early history, such as Captain John Smith.

Modern Maryland residents are directly related to the area's prehistoric cultures, simply by living in the same area. If the remains of prehistoric cultures are not preserved, these residents will lose a valuable cultural and aesthetic heritage. Most importantly, we will all lose a great deal of information about the cultural processes that operate in human societies.

Maryland's rich archeological remains have never been adequately studied. Nor have these resources been systematically tapped for information on prehistoric and early historic economic systems and cultural relationships. The ever quickening rate of modern shoreline development is removing forever potentially significant resources about which almost nothing is known. If the area's prehistoric resources were studied, Maryland could play a prominent role in the understanding of the prehistory of the eastern United States as well as providing data on prehistoric human behavior unique to its own setting.

Disturbance and Destruction of Prehistoric Resources

As soon as they were deposited, prehistoric resources began to be disturbed by natural and cultural processes. Wind and water erosion and sedimentation scattered and buried these remains. Activities by later cultures also altered the soil and the prehistoric remains found in it. Although this disturbance has proceeded constantly throughout most of the past, it has accelerated during the past 50 years. Increases in population and improvements in earthmoving technology can now quickly alter large areas of the landscape.

Coastal areas are noted for their rich natural resources brought together by the intersection of land and sea. These natural resources attracted prehistoric cultures in large numbers, resulting in the deposition of many prehistoric remains, especially when compared with the sparse prehistoric occupation and remains that often characterize inland areas. Because of its rich and diverse resources, the coast has had a unique influence on human populations and has been the scene of important cultural developments (Dunnell ms.).

In addition to its attraction to prehistoric cultures, the coastal zone also is the focus of many modern activities. Almost half of the country's labor force is employed in the coastal zone at present and as much as 80% of the country's population may live in this zone by the year 2000. Thus, there is a great overlap between the distributions of prehistoric resources and modern activities in the coastal zone.

When Captain John Smith left the Jamestown colony in 1612 to explore Chesapeake Bay and its tributaries, he met groups of native peoples all along his route. Most of these groups had a long cultural history and may have been descended from people who occupied what is now the Chesapeake Bay area as long ago as 10,000 years or more. Since the early 1600's, as Euroamerican occupation and development of the Maryland coastal area has proceeded, the remains of Maryland's coastal prehistoric cultures have increasingly been disturbed by our modern land use. As development in the Maryland coastal zone continues, concern for its effects on natural resources has been expressed. But the effects of development are frequently more harmful to prehistoric resources than they are to natural resources because cultural resources are unique, extremely fragile, and nonrenewable.

Because we cannot estimate the total number of prehistoric resources that were deposited and because we also do not know how many have already been disturbed or destroyed, we cannot conclude how many of these resources may yet remain for possible preservation. According to one estimate, the state of Arkansas lost 25% of its prehistoric resources in the period between 1962 and 1972 (McGimsey 1972:3). Likewise, as few as 10% of the prehistoric resources located around the shore of San Francisco Bay may remain today (Moratto 1970:2).

Thus, as time passes, the resources as a whole diminish in quantity and increase in importance. The value of any given prehistoric site increases as the reservoir of similar

sites available for preservation decreases. Prehistoric resources are being lost at an alarming rate in Maryland. Why? For several reasons: they are not readily apparent to an untrained observer; their importance is unknown and unappreciated; and their investigation may cause delays in construction and cost increases.

Access to information about the past can be viewed as a basic human right. This right should not be abridged unless it is through an overriding concern for the public well-being. Once destroyed, prehistoric remains cannot be regenerated; the cultures that these remains represent are forever lost. Finally, these remains are tangible evidence of the long ancestral history of today's Native American population. Care and respect equal to that given early colonial grave sites should be given the remains of Native Americans who interacted directly with early colonists.

In Maryland two state agencies deal with prehistoric resources, the Division of Archeology and the Maryland Historical Trust. The Division of Archeology is designated by legislation to conserve prehistoric resources, previously concerned almost exclusively with historic resources, the Maryland Historical Trust has added a staff archeologist. This agency receives Federal funds for surveys to locate significant prehistoric sites and for developing a state historic preservation plan. They do not indicate the relative abundance of kinds of prehistoric resources or locations where they are not found.

The second chapter in this report summarizes information on the environment of the Maryland coastal zone, emphasizing its changes during the time that prehistoric occupation is likely to have taken place and the implications these changes have had for prehistoric activities and the subsequent preservation of prehistoric remains.

Chapter Three summarizes what is known of prehistoric occupation of the area and considers what ages and activities might be expected. Historic accounts of native groups at the time of European exploration are also discussed.

The appendix lists sources of additional information on Maryland's coastal prehistoric resources.

References Cited

Day, G. M.
1953 The Indian as an ecological factor in the northeastern forest. *Ecology* 34:335-346.

Dincauze, D. F. and J. Meyer
1975 Prehistoric resources in east-central New England: a preliminary predictive study. *Cultural Resource Management Studies,* National Park Service, Department of the Interior. Washington, D. C.

Dunnell, R. C.
ms. Comments on final proposed guidelines, Shoreline Management Act of 1971 (Washington State). Department of Anthropology, University of Washington. Xeroxed.

Elder, W. H.
1965 Primeval deer hunting pressures revealed by remains from American Indian middens. *Journal of Wildlife Management* 29:366-370.

Heizer, R. F.
1955 Primitive man as an ecologic factor. *Kroeber Anthropological Society Papers* No. 13. University of California, Berkeley.

Lewis, H. T. and C. Schweger
1973 Paleo-Indian uses of fire during the late Pleistocene: the human factor in environmental change. *Abstracts of the Ninth Congress of the International Union for Quaternary Research Meetings,* Christchurch, New Zealand, p. 210.

McGimsey, C. R. III
1972 *Public Archeology.* Seminar Press, New York.

Maxwell, H.
1910 The use and abuse of forests by the Virginia Indians. *William and Mary College Quarterly Historical Magazine* 19:73-103.

Moratto, M. J.
1970 *Death of the past.* A Report to the People of California by the Society for California Archeology.

CHAPTER 2
ENVIRONMENTAL DYNAMICS

Chapter 2

Environmental Dynamics

In order to understand the nature and distribution of Maryland's prehistoric resources, it is necessary to understand the changing environments to which prehistoric people adapted. Environmental changes altered the availability of plants and animals, in turn affecting where people settled. These changes also affected the preservation of prehistoric remains in that natural forces through time created a patchwork of preserved remains of various ages and functions. Therefore, the record of prehistoric remains in the Maryland coastal zone is expected to be complex, both in its original content and as it is presently preserved.

Documenting important environmental changes in Maryland occupies most of this chapter; it concludes by focusing on the implications these changes have for the distribution and preservation of prehistoric remains in the study area.

Geology and Physiography

There are three physiographic provinces in Maryland: the coastal plain, the Piedmont plateau, and the Appalachian Mountains. These provinces parallel the Atlantic coast in bands of varying width, increasing in elevation and relief to the west. Figure 2-1 illustrates their locations, including the kinds and ages of the underlying rocks that largely determine the topography of each province (Vokes and Edwards 1968).

The coastal plain is a low, flat surface that extends from the coast of Maryland to the Fall Line west of Chesapeake Bay (Fig. 2-1). This plain is a wedge of unconsolidated clays, silts, and sands with some gravels, ranging in age from Cretaceous to Pleistocene. Underlying these sediments is an eroded surface of predominantly Pre-Cambrian crystalline rocks that emerges at the Fall Line. While the Eastern Shore coastal plain is low and flat, the Western Shore is a rolling upland marked by relatively higher elevations.

Most of the Maryland shoreline is broken and sinuous because sediments on the coastal plain offer little resistance to erosion and because low-lying portions are easily inundated. Only the bayshore of Calvert County and parts of Anne Arundel, Queen Annes, and Kent counties are marked by higher bank or relatively straighter shorelines.

The Piedmont plateau starts at the Fall Line, where the more resistant crystalline rocks meet coastal plain sediments, creating a drop in stream gradients (Fig. 2-1). The Piedmont consists of a broad upland with low knobs and ridges, cut by narrow stream valleys (Vokes and Edwards 1968).

The Appalachian Mountains province (Fig. 2-1) is characterized by a series of ridges formed of more resistant materials and separated by valleys cut into less resistant materials.

During the Pleistocene epoch, over 1,000,000 - 10,000 B.P. (Before the Present), variations in temperature and precipitation caused huge continental ice sheets alternatively to expand and to contract. Many studies have reconstructed the nature, history, and age of landforms altered by the glaciers and sediment derived from them. During the height of the most recent continental glaciation (about 25,000 B.P.), the nearest edge of the continental ice sheet was about 200 km. north of what is now Maryland (Prest 1969).

Although none of Maryland's physiographic provinces was glaciated, indirect effects of glaciation can be seen, particularly in the coastal plain, where there is evidence of sea level changes and sediments deposited by rivers, seas, and winds. A layer of loess (windblown silt) of varying thickness covers much of the land along Chesapeake Bay. This deposit dates from the end of the last glaciation, about 14,000 - 10,000 B.P. (Foss, Fanning, and Miller 1974). The dominant geologic process affecting the coastal plain today is erosion from surface runoff (Gottschalk 1945; Costa 1975) and shoreline wave action (Maryland Geological Survey 1975; Schubel 1968; Singlewald and Slaughter 1949).

Postglacial Sea Level Rise

The most striking changes in the Maryland landscape are associated with the formation and continuing evolution of the Chesapeake Bay estuary. This drowned drainage system originally was the valley of the ancestral Susquehanna River and included deeply cut major tributaries in addition to short, steeply graded minor tributaries.

Scientists estimate that at its greatest regression sea level stood about 100 m. lower than it stands today (Flint 1971:342). This situation coincided approximately with the maximum extent of continental glaciation, some 25,000 B.P. The lowered sea level displaced the Atlantic shoreline eastward about 250 km., increasing the downcutting capacity of the Susquehanna River and its tributary streams.

When the late-glacial warming period began about 18,000 B.P., the level of the world's oceans began to rise. Kraft, Biggs, and Halsey (1973) have developed a model for recent sea level rise, based on dated samples of peats formed during the early stages of this rise along the Delaware coast. These samples were extracted from various depths, radiocarbon dated, and the results graphed (Fig. 2-2). The curve suggests that sea level has been steadily rising, although at an ever-decreasing rate, for at least 8,000 years.

Since little work has been done on sea level changes in the Chesapeake Bay area, there is no information to confirm the applicability of the Delaware model there. Research in the northern Bay area provides some data relevant to sea level changes. For example, a radiocarbon date of 5,565 ± 65 B.P. was obtained from a sample of oyster shells from the base of a prehistoric shell heap at the mouth of Fairlee Creek in Kent County. Another date of 5,065 ± 165 B.P. was obtained from the base of a shell heap at the mouth of Big Marsh, next to the confluence of the Sassafras River and Chesapeake Bay.[1] The extent of the deposits and the size and thickness of the shells suggest that a vigorous oyster reef was established in this extreme northern position at least 6,000 years ago.

[1] These radiocarbon dates were provided by Dr. Robert Stuckenrath, Smithsonian Institution. Their laboratory numbers are S.I. 1906 (5,565 ± 65 B.P.) and S.I. 1917 (5,065 ± 165 B.P.).

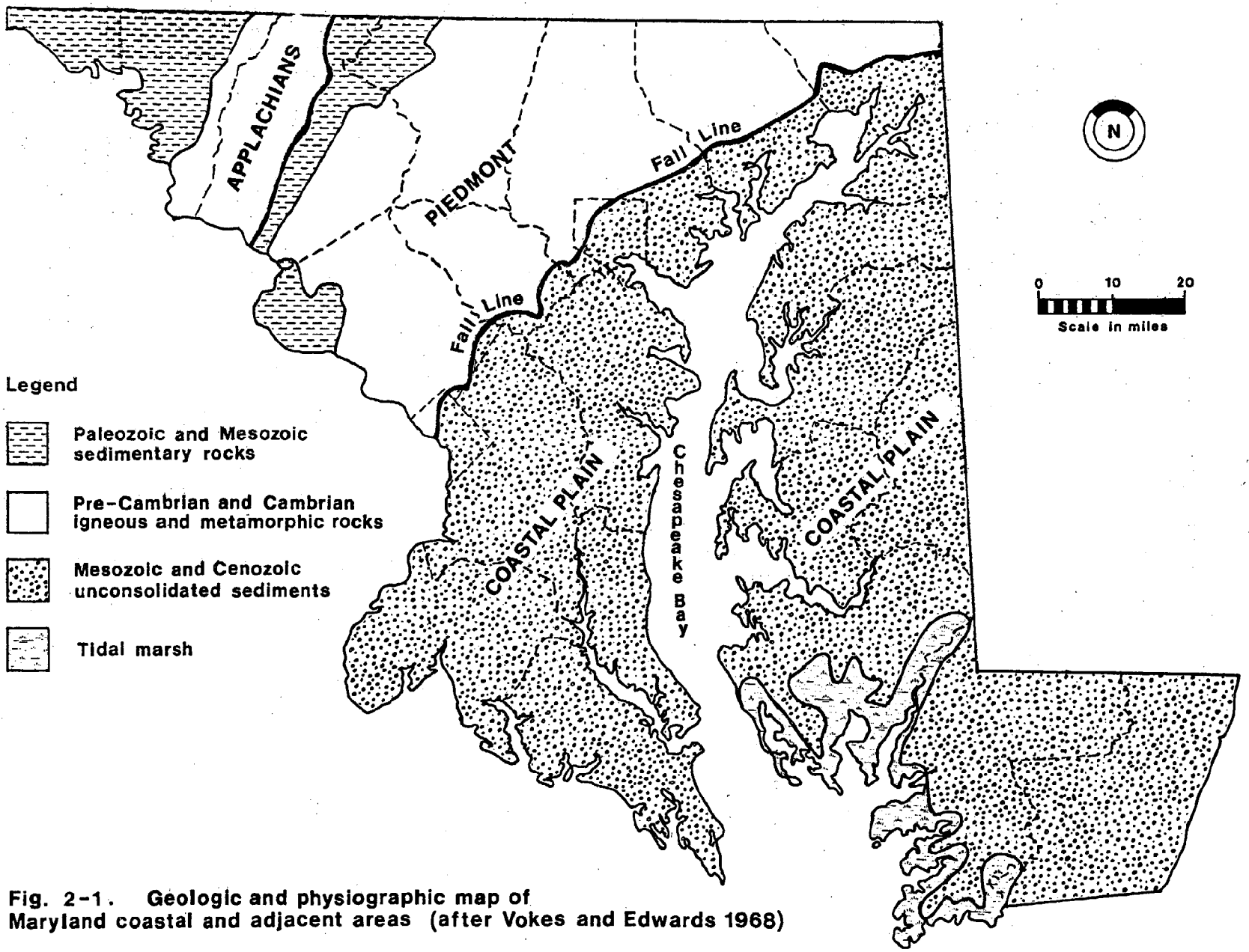
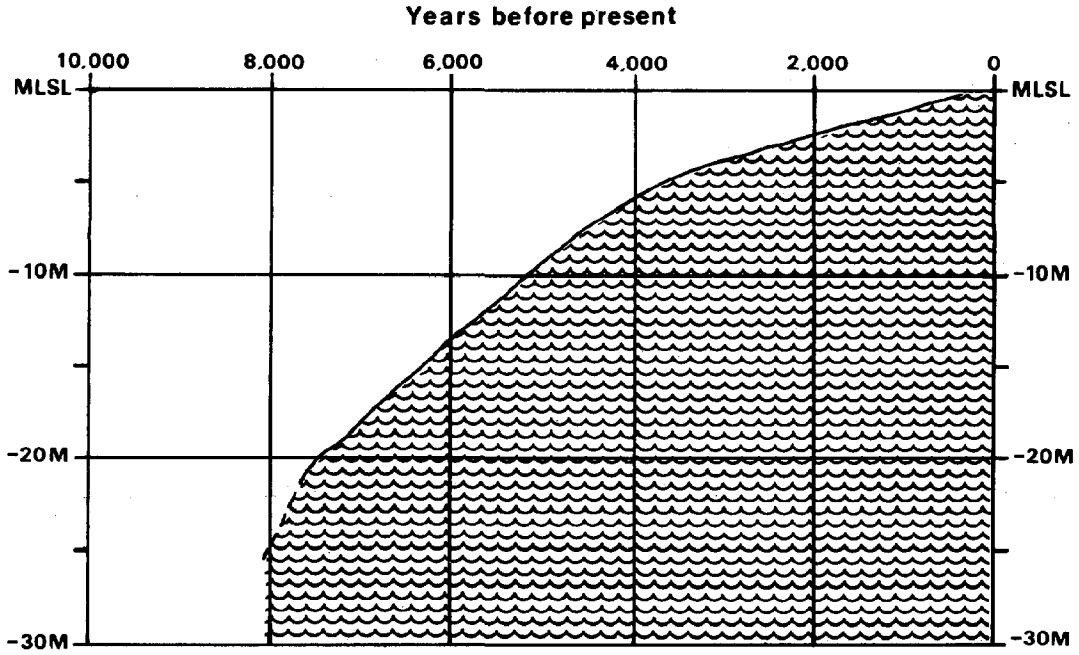


Fig. 2-1. Geologic and physiographic map of Maryland coastal and adjacent areas (after Vokes and Edwards 1968)



Note: Curve based on data from Delaware Coast.

Fig. 2-2. Relative sea level rise curve of Kraft et al. (1973)

The history of oysters in Chesapeake Bay is important because sites related to oyster gathering are the most readily detectable sites in Maryland's coastal zone. Further work is needed in clarifying the time and the extent of sea level rise; however, the evidence at hand suggests that human populations occupied the area before the Chesapeake Bay formed. Many of the very early sites have of course been lost to the combined processes of sea level rise and erosion.

Figure 2-3a shows the current shoreline of the Chesapeake Bay region. In contrast, Fig. 2-3b shows a reconstruction of the same area during a period of lowered sea level. The Atlantic shoreline is shown at the present 18 m. depth contour and represents a condition extant at approximately 7,000 B.P. (Kraft, Biggs, and Halsey 1973). The margins of Chesapeake Bay and the Atlantic Ocean were displaced inland with the rise in water level. The continued submergence of the area means that low profile parts of the coastal zone are being inundated rapidly, and thus we are losing many prehistoric resources related to earlier positions of the shoreline.

Once the Chesapeake Bay was established, related natural processes began to change local environments. Shore erosion, along with the transportation and deposition of sediment, played an increasing role. As the sea began to flood each area, newly formed estuaries expanded across former flood plains to abut flanking uplands which were composed of relatively soft, unconsolidated and easily eroded sediments. A highly indented coastline with numerous bays and coves was created. The expanding estuary extended the distance over which prevailing winds could create waves. In some areas, as the water rose and depths increased, the destructive power of the waves grew because they did not lose force in crossing extensive shallows. The result of all these factors was probably an ever increasing rate of shore erosion.

An Example of the Environmental Effects of Sea Level Rise

The following discussion indicates the nature and extent of the changes which the Maryland coastal zone has undergone over the past 10,000 years. The example shows the effects of sea level rise and shore erosion. Thus, Fig. 2-4 illustrates reconstructed stages of landscape development for parts of the Maryland coastal zone where shoreline changes have been documented by our studies.

Figure 2-4A shows the area as it probably appeared before inundation. The locale was characterized by an upland deciduous forest, ravine slopes, and freshwater streams. With the beginning of inundation (Fig. 2-4B), the stream and ravine slope were transformed into a brackish water shore zone. Continued inundation (Fig. 2-4C) increased the proportion of open water relative to the surrounding uplands.

As sea level continued to rise, erosion modified the shoreline. Sand spits formed downcurrent from eroding headlands (Fig. 2-4D). Many coves and inlets, once part of the highly indented shore zone landscape, closed completely (Figs. 2-4E and 2-4F).

Figure 2-4G locates prehistoric shell heaps around this coastal lagoon, with basal radiocarbon dates from four sites. Prehistoric people began to use this location by at least 4,000 B.P. Figure 2-5 illustrates a portion of one of the thick shell heaps that ring this coastal lagoon.

The events which ended with the closing of the cove mouths by a stable sand spit would have had important implications for resources and hence for human population distributions. First, the proportion of marshland to open water behind the migrating sand spit increased. Also, waters behind the closed spit became fresh, as did the marsh. Final spit closure denied anodramous fish access to upper stream areas and denied oysters a suitable habitat. Subsequent changes in the landscape included continued filling of the lagoon by sediments, with increasing marsh and shrub vegetation. Ultimately, open water was displaced by woody plants and trees. Figures 2-4F and 2-6 show the present appearance of this coastal setting.

In summary, the coastal zone is dynamic, and some of its features are ephemeral. Prehistoric people had to change their resource procurement strategies in order to adjust to environmental change or abandon certain areas in favor of others.

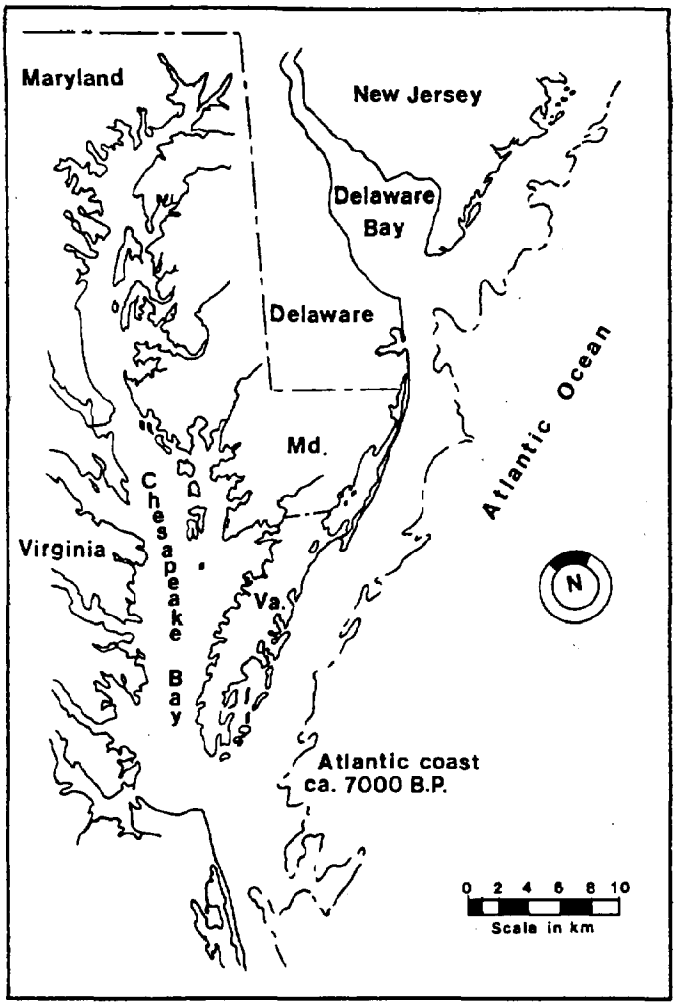


Fig. 2-3a. Chesapeake Bay region today

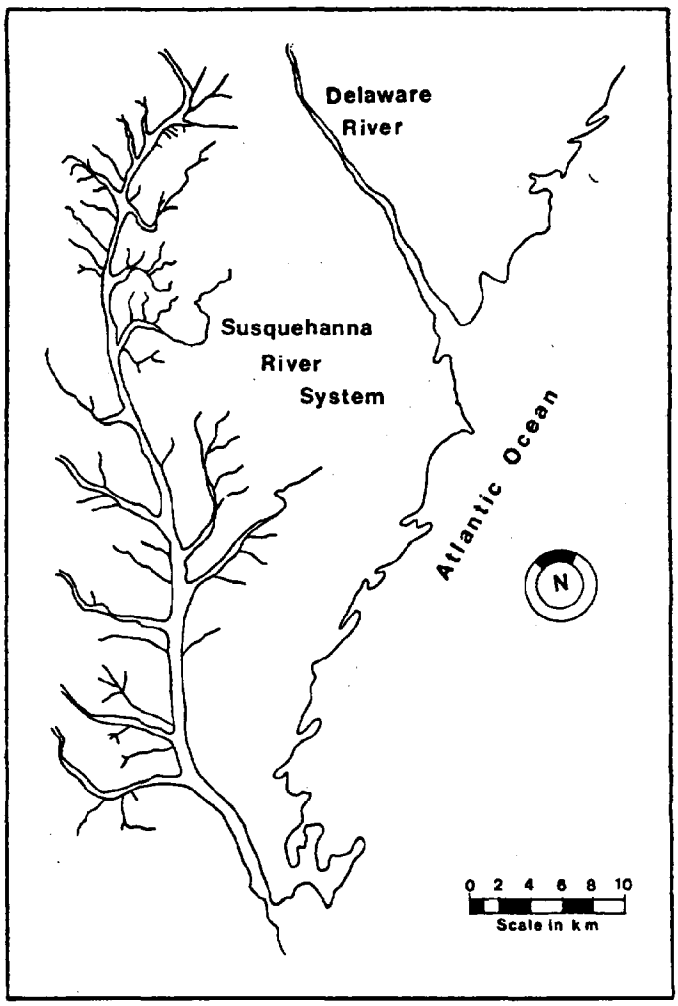
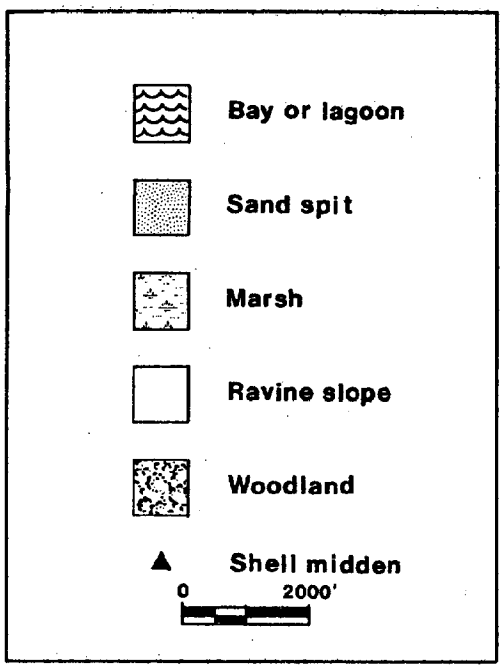
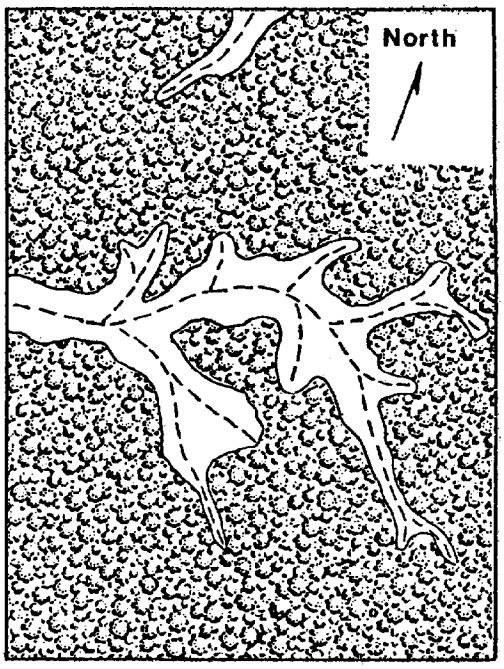
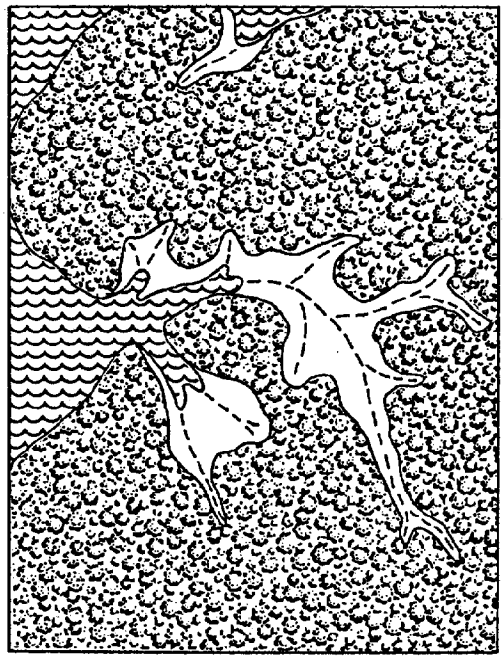


Fig. 2-3b. Schematic representation of Chesapeake Bay region ca. 7000 B.P.

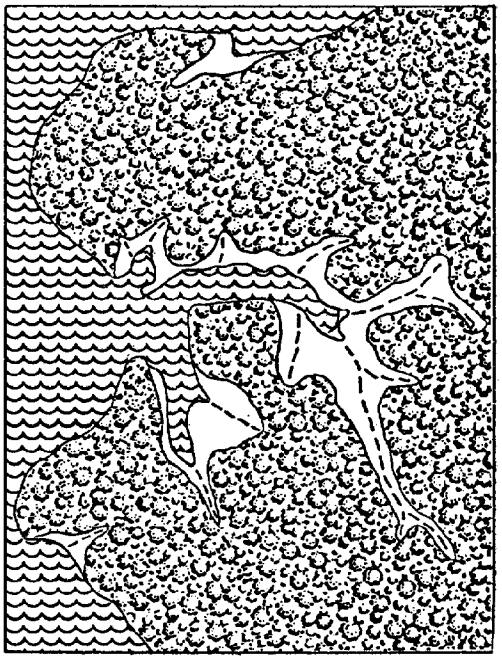




A. Pre-inundation drainage

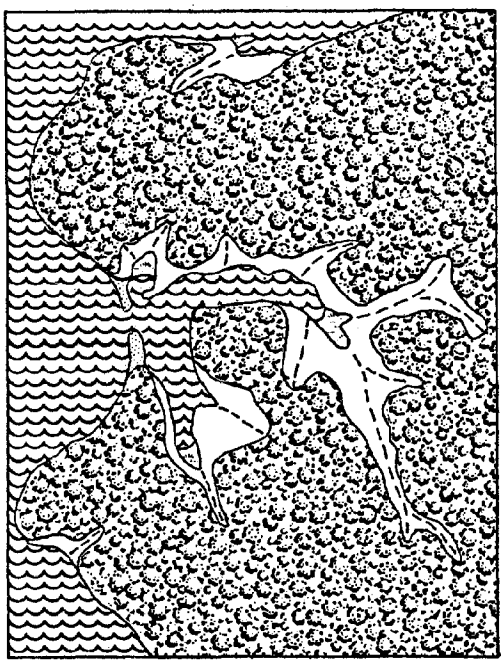


B. Encroachment of brackish water, minimum date 7000-9000 B.P.

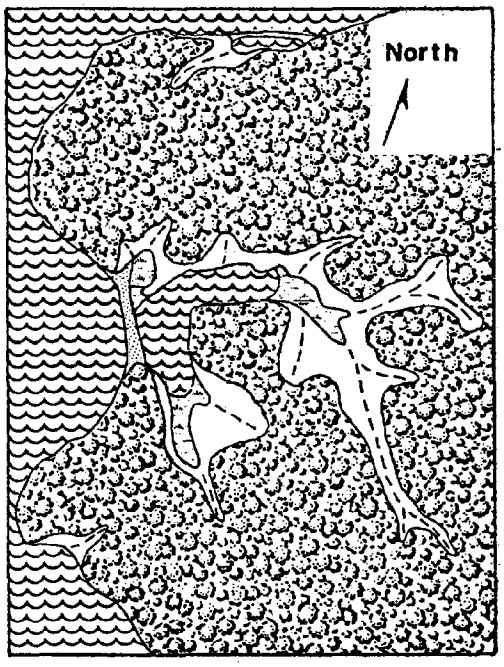


C. Continued inundation

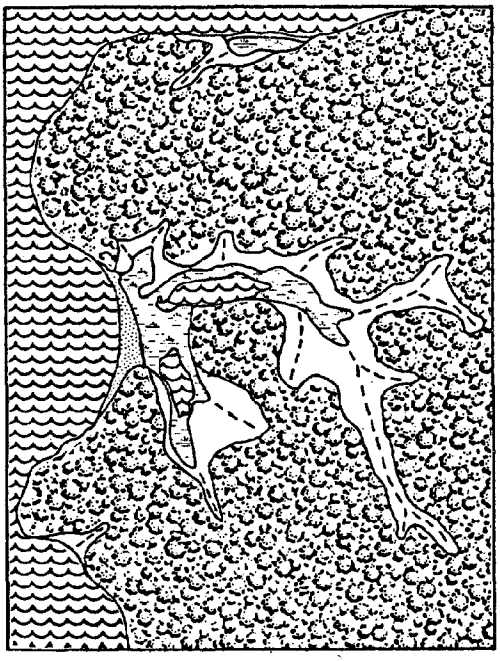
Fig. 2-4. Example of postglacial shoreline evolution in Kent County, Maryland



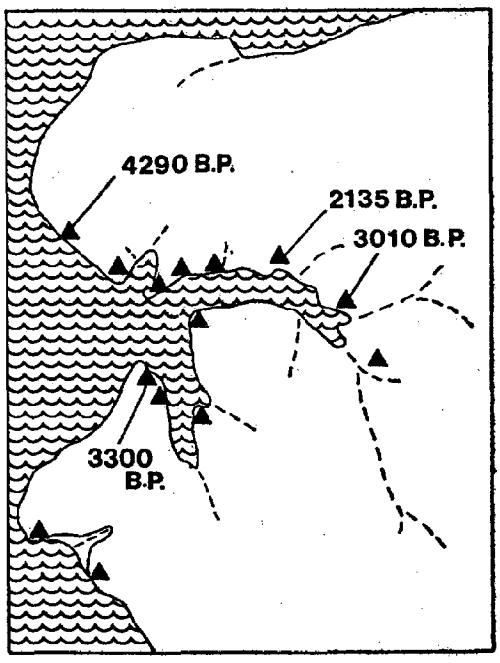
D. Initial sand spit formation



E. Complete sand spit closure, minimum date 900 B.P.



F. Coastal setting today



G. Prehistoric shell site locations with select basal radiocarbon dates

Fig. 2-4. Example of postglacial shoreline evolution in Kent County, Maryland

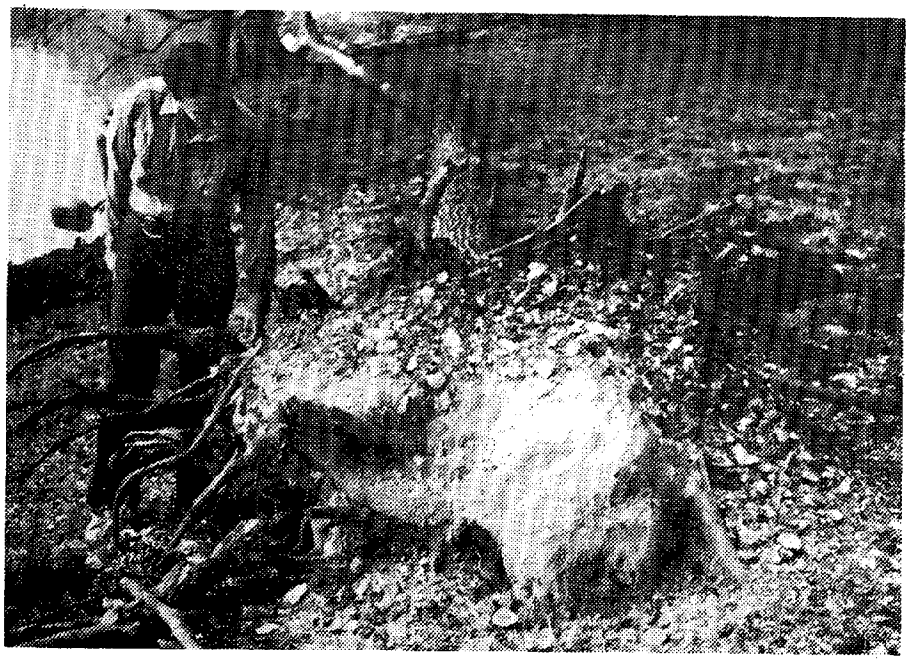


Fig. 2-5 Shell exposed along bank of coastal lagoon depicted in Fig. 2-4

Fig. 2-6 Aerial view of coastal lagoon depicted in Fig. 2-4

Soils

The soils that mantle Maryland result from complex chemical and physical interactions over long periods of time among parent material, climate, vegetation, and geomorphic factors. As a result of the granular parent material, coastal plain soils are sandy to silty, very light to medium in texture, and generally well-drained except in low-lying areas with high water tables or extensive hardpan development. These soils are typically highly acidic. Piedmont and Appalachian soils are more variable, reflecting the complex geologic environments encountered in those areas.

The subsistence economies of Maryland's prehistoric people were influenced by the plants and animals available to them, and these were in turn influenced heavily by the nature of the soil. Varying widely in drainage, chemical, and physical characteristics, soils were variously used by prehistoric people in resource exploitation and settlement location. In addition to contributing to land use and hence to the distribution of prehistoric remains, soils influence the preservation of these remains. Through time, strongly acid soils eliminate or deteriorate bone and antler materials, introducing strong bias into the prehistoric record. An important exception occurs, however, in areas where the soil has been influenced by shell debris left by prehistoric people. The resulting alkaline condition preserves bone and antler. Thus, in the coastal zone shell heaps provide a special opportunity for finding a wider range of prehistoric food and tool remains than would usually be found in areas with highly acid soils.

Forests

Maryland forests are characterized by a wide variety of deciduous trees and shrubs. Forests were important to prehistoric people because they supplied food and cover to them and to the animals they depended upon.

During the early period of European exploration and settlement, upland and mountain forests retained their natural state. Other areas, however, especially along the Piedmont river valleys, had been altered in prehistoric times by horticulture and burning. Since European settlement, forests have been greatly altered by clearing for agriculture, and cutting for fuel and lumber. Chestnut blight has accounted for the loss of American chestnut trees.

Before these changes took place, the Middle Atlantic Piedmont was a vast forest of oak-chestnut (Shelford 1963) which extended to the eastern flanks of the Appalachian Mountains. There, other kinds of forests dominated various elevations. In the coastal plain, the oak-chestnut forest gave way to oak-hickory. Both types of forest produced nuts, a valuable source of food for people and animals. The coastal plain also contained upland or drainage divide swamps, as well as riverine and coastal swamps and marshes (Braun 1950).

Although pollen experts disagree about how much Mid-Atlantic coastal plain forests changed during the last glacial age and the following warming period, a general outline of events is available. Whitehead (1965, 1973) has reconstructed vegetation for the area from Chesapeake Bay to southeastern North Carolina from the full-glacial period to the present time. He suggests that during the full-glacial period, 25,000 to 15,000 B.P., the Chesapeake Bay area was made up of spruce, pine, some fir, and birch forests. His map shows a spruce forest over the coastal plain and Piedmont, south of a tundra-taiga zone beside the ice sheet. Pine forest grew between the spruce forest and a southern deciduous forest. Whitehead suggests that the northern trees were displaced southward over 1,000 km. on the east side of the Appalachians, there developing forests with few deciduous trees over a broad area south of the ice.

Late-glacial vegetation changes saw the spruce-pine forest replaced by a pine forest, in turn replaced by a beech-hemlock forest. The oak-hickory forest became established by 10,000 B.P. Whitehead's conclusions are supported by the work of Harrison *etal.* (1965) and Owens *etal.* (1974) in the Chesapeake Bay area. It should be noted that the early northern type forest produced little plant or animal food that prehistoric people could use easily, when compared to the later, more productive deciduous forest.

Animals

Unfortunately, there is little information available on the makeup of Maryland animal populations during the past 10,000 years. The varied physiographic sections of Maryland today support a similar animal life. However, the populations and ranges of Maryland mammals and birds have been radically changed by European settlement. Certainly some species which prehistoric people hunted are no longer found in the state.

The diversity of land resources was matched by equally diverse and abundant water resources. The broad, slow-moving tidal waters of the coastal plain provided habitats for huge populations of fish and shellfish as well as vast flocks of migratory waterfowl. In addition, the Bay and the upper freshwater parts of the river-estuaries provided spawning and nursery areas for large schools of anadromous fish, such as shad and alewife.

How Environment Affects the Distribution and Preservation of Prehistoric Resources

The rise of sea level after the last continental glaciation was the single most dynamic change to which prehistoric people in the area adapted. The drowning of the Susquehanna River system by the sea created the complex set of environments that now compose Chesapeake Bay and its coastal zone. Here, over time, differences in salinity, topography, soils, vegetation, and substrate have formed an increasingly diverse set of habitats, supporting rich and varied plant and animal life. Because of the dynamic nature of the coastal zone, the record of prehistoric resources is expected to be complex—both in content and in particular the remains preserved.

The radical change in sea level affected the distribution and preservation of prehistoric resources in six major ways:

The ancestral Susquehanna River drainage system became a large coastal plain estuary. The rising sea increased the environmental complexity of the area through time, creating more diverse wildlife habitats. Because the coast was a richer area to exploit than either land or sea alone, prehistoric people came to exploit the coastal zone. As a result, prehistoric resources are concentrated along the land-sea interface, decreasing in number with increased distance from the shoreline.

Other changes resulted from the continued flooding. Chesapeake Bay increased in size, changing the land to water ratio; the shoreline lengthened and became more complex; water, depths increased; stream gradients decreased; currents and salinity altered; and the erosion rate increased. Such changes affected the number, complexity, and location of natural resources, and therefore suggest that many kinds of prehistoric resources of various ages exist in the Maryland coastal zone.

Because the physiographic makeup of a coast determines the ease with which it can be inundated by rising water, higher bank shorelines (although less accessible to people from the water) are less susceptible to inundation. Therefore, more and older coast oriented resources are probably preserved in these areas than along low ground areas such as the lower Eastern Shore.

The topographic character of the coast being flooded controls the shape of shorelines, as well as the range of landforms that result. Highly indented shorelines offer more shelter and natural resources in less space than do straight, featureless coastlines. Hence, sinuous coastlines are likely to contain high densities of prehistoric resources.

Owing to the effects of ongoing flooding, landscape features representing various periods of time have been preserved. Of primary importance are old Bay shorelines, now the uplands around lagoons and marshes (see Fig. 2-4). Because they were once the shoreline, these areas may be the only places where coastal prehistoric resources of certain ages are preserved.

Natural events have preserved some resources but destroyed innumerable others. The rising sea has almost completely destroyed certain environments, such as ancestral flood plains, thus eliminating certain ages and kinds of prehistoric remains around Chesapeake Bay. Many prehistoric resources lie under the tidal waters and marshlands of Maryland, because they have been inundated by the advancing sea.

Other considerations affect the distribution and preservation of prehistoric resources. Changes in the physical and chemical makeup of Chesapeake Bay waters may have directly influenced the distribution of prehistoric inhabitants. Bay salinities were of particular importance: Bay waters are characterized by a continuum of salinity values. Although the absolute values of the salinity gradient change with the season, the basic lateral and vertical stratification remains. Each of the Bay's major tributaries, like the Bay itself, is characterized by fresh waters at the source and brackish waters at the mouth. Therefore, for any given period a variety of resources might be expected to occur along each body of water. Both in the Bay and in its tributaries, the transition area between fresh and brackish water provides an environment for harvesting both fresh and brackish water resources. Prehistoric resources may be dense along transition areas.

Owing to environmental changes (particularly silt deposition from run-off caused by modern land clearing and agriculture), the distribution of oysters is now reduced. Therefore, the distribution of prehistoric resources near oyster reefs is probably greater than the present distribution of living oyster reefs.

Surface geological deposits not only determine what the coast looks like, but they also provide the parent material on which soils, plants, and animals establish themselves. In a broad sense, prehistoric remains may differ with geological settings. Another way in which the coast, as a geologic setting, has affected prehistoric resources include: a thick layer of loess (windblown silt), deposited from 15,000 to 10,000 B.P. covering parts of the uplands along the upper eastern Chesapeake Bay shoreline. Very early prehistoric resources in this area are now under perhaps five feet of sediment. Such remains are likely to be uncovered only by surface erosion or deep excavations.

The raw materials for making stone tools were limited in the coastal zone. Pebble cherts, jaspers, quartz, and quartzite were available. The presence of other raw materials, such as rhyolite, soapstone, and argillite, all of which had to be imported, indicates prehistoric people had contact with other areas.

Different geologic materials have different resistances to erosion, affecting changes in local landforms. Fewer coast-oriented prehistoric resources may be expected in areas with high rates of erosion.

Soils formed on coastal plain sediments affected the activities of prehistoric people and continue to modify their remains: coastal plain soils influence the plant and animal makeup of upland areas, thus helping to determine the nature and location of resources. Correlations between soil type and prehistoric resources are likely; for example, late period horticultural settlements would be expected to be most common in areas with fertile, well-drained, and easy-to-work soils.

The highly acid nature of coastal plain soils directly affects the preservation of prehistoric remains, in destroying artifacts differentially. Perishable food and tool remains such as wood and bone are removed from the record; more resistant materials such as stone and ceramics remain. An important exception is in coastal shell heaps where a basic soil favors the preservation of bone and antler. Thus, materials in coastal sites vary according to soil conditions as well as according to the age and culture. Sites which represent extensive use of organic raw materials may be difficult to document unless accompanied by shell deposits or certain other conditions (such as charring) which help preserve organic remains. It should be noted that soil chemical analysis may aid in delineating sites of this type.

Finally, the character of the plant and animal resources available for human exploitation influenced the economic systems which prehistoric people devised to exploit them: many of the most important coastal zone animals are available only during specific seasons; for example, saltwater fish which spawn in rivers and migratory waterfowl. Prehistoric resources should be found that relate to specific seasonal exploitation activities. These remains should be located in areas permitting the greatest harvest at the time of their availability.

Important plant resources also were available only during specific seasons. The best time for gathering berries and grasses, for example, would be summer; nuts would be available in the fall, and roots, in the spring. Prehistoric resources should exist in the coastal zone or in nearby upland areas, where seasonal plant gathering took place.

References Cited

Braun, E. L.
1950 *The deciduous forests of eastern North America.* Blakiston Co., Philadelphia.

Costa, J. E.
1975 Effects of agriculture on erosion and sedimentation in the Piedmont Province, Maryland. *Geological Society of America Bulletin* 86:1281-1286.

Flint, R. F.
1971 *Glacial and quaternary geology.* John Wiley and Sons, New York.

Foss, J. E., D. C. Fanning, and F. P. Miller
1974 Loess deposits on the Eastern Shore of Maryland. Paper presented at the American Society of Agronomy Annual Meeting at Chicago, Illinois. *Agronomy Abstracts:* 158-159.

Gottschalk, L. C.
1945 Effects of soil erosion on navigation in upper Chesapeake Bay. *Geographical Review* 35:219-238.

Harrison, W., R. J. Malloy, G. A. Rusnak, and J. Terasmae
1965 Possible late-Pleistocene uplift, Chesapeake Bay entrance. *Journal of Geology* 73:201-229.

Kraft, J. C., R. B. Biggs, and S. Halsey
1973 Morphology and vertical sedimentary sequence models in Holocene transgressive barrier systems. In *Coastal geomorphology,* edited by D. R. Coates, pp. 321-354. State University of New York, Binghamton.

Maryland Geological Survey
1975 *Historical shorelines and erosion rates.* Publication of the Maryland Coastal Zone Management Program.

Owens, J. P., K. Stefansson, and L. A. Sirkin
1974 Chemical, mineralogic, and palynologic character of the Upper Wisconsinian-Lower Holocene fill in parts of Hudson, Delaware, and Chesapeake Estuaries. *Journal of Sedimentary Petrology* 44:390-408.

Prest, V. K.
1969 Ice margin positions. In *Retreat of Wisconsin and Recent Ice in North America.* Canada Department of Energy, Mines, and Resources, Geological Survey of Canada Map 1257A.

Schubel, J. R.
1968 Suspended sediment of the northern Chesapeake Bay. *Chesapeake Bay Institute Technical Report* 35. The Johns Hopkins University.

Shelford, V. C.
1963 *The ecology of North America.* University of Illinois Press, Urbana.

Singlewald, J. T. and T. H. Slaughter
1949 Shore erosion in Tidewater Maryland. *Maryland Department of Geology, Mines, and Water Resources Bulletin* 6.

Vokes, H. E. and J. Edwards, Jr.
1968 Geography and geology of Maryland. *Maryland Geological Survey Bulletin* 19. Baltimore, Maryland.

Whitehead, D. R.
1965 Palynology and Pleistocene phytogeography of unglaciated eastern North America. In *The Quaternary of the United States,* edited by H. E. Wright, Jr., and D. G. Frey, pp. 417-432. Princeton University Press.
1973 Late-Wisconsin vegetational changes in unglaciated eastern North America. *Quaternary Research* 3:621-631.

CHAPTER 3
CULTURAL DYNAMICS

Chapter 3

Cultural Dynamics

The story of the people who lived in Maryland before the Europeans came can be told only by the prehistoric archeological record. When Europeans began to settle the area at the end of the sixteenth century, they wrote descriptions of the lifeways of the Native Americans they met. These descriptions provide some information on prehistoric land use and hence on the nature and distribution of archeological sites dating to that period. However, for the 12,000 or more years during which prehistoric cultures existed before the coming of the Europeans, there is *only* the prehistoric record.

Prehistoric people inhabited the Maryland coastal zone for thousands of years, which suggests that the area is likely to contain abundant prehistoric resources. Furthermore, these resources are likely to be varied as activities changed along with and independently of environmental changes through time. What do archeologists know about prehistoric resources in Maryland's coastal zone?

At present, archeologists know little about prehistoric people and their economic adaptations to the Maryland coastal zone. What information is available is sketchy and not necessarily representative of the range of diversity of the prehistoric record. In fact, there have been very few professional projects, especially along the Eastern Shore. Virtually no systematically derived information exists for Maryland's Atlantic shoreline, aside from what can be generalized from similar nearby areas in Delaware. Most available studies describe artifacts at individual sites or offer untested speculations about past activities. In short, there is no detailed regional information available on the kinds of prehistoric resources, their interrelationships, distributional patterns, or relative abundance in the coastal zone. In general, information about past culture decreases in detail and amount as one considers older and older time periods.

Most available studies reflect the early goals of archeologists who were primarily interested in establishing regional chronologies. These studies concentrated on the age and distribution of artifact types, especially ceramics and projectile points (or arrowheads). Although they continue to be interested in establishing regional chronologies, archeologists now are increasingly interested in studying prehistoric lifeways. More recent studies concentrate on regions, rather than individual sites. Such studies are valuable because they seek to explain changes in settlement patterns and subsistence systems. Information of this sort is necessary for constructing rational frameworks for assessing site significance and representativeness.

Archeological studies have recognized four prehistoric cultural traditions in Maryland: Paleo-Indian, Archaic, Broadspear, and Woodland. The cultural units of these traditions are summarized in Fig. 3-1.

The prehistory of the Maryland area may be summed in a general way by referring to adaptive changes through time. These changes are reflected in the nature and distribution of prehistoric artifacts and groups of artifacts in the coastal zone. The earliest culture, the Paleo-Indian Tradition, may be seen as a hunting and gathering adaptation to a time of changing environmental conditions at the end of the last continental glaciation. As the environment stabilized to near its present form, Archaic Tradition cultures of seasonal hunters and gatherers established themselves, expanding through time toward the limits of the environment's carrying capacity and their technology. The spread of the Broadspear Tradition about 4,000 years ago appears to have signaled new technological advances; hunting and gathering in the coastal zone became more efficient. The final adaptive change was the adoption of horticulture late in the Woodland Tradition about 1,000 years ago. The population then increased beyond that which could be supported by hunting and gathering alone.

Fig. 3-1

Time-Space Chart of Maryland Area Prehistoric Cultures

Years B.P.			Lower Potomac Valley (Gardner & McNett 1971; McNett & Gardner ms.; Stephenson *et al.* 1963, Wright, 1973)	Delaware State (Thomas 1974)
500	WOODLAND	Late	Algonquian Tribes	Nanticoke/Leni Lenape
1,000			Potomac Creek [Townsend Phase]	Webb Phase
			Mockley Phase	Slaughter Creek Phase
2,000		Middle	Accokeek Creek Phase	Delmarva Adena Phase
			Popes Creek Phase	Carey Complex
3,000	BROADSPEAR		Marcey Creek Phase	Susquehanna Phase
4,000		Early	Broadspear Tradition, Susquehanna Phase	Piedmont, Laurentian Traditions, Koens-Crispin Phase
5,000	ARCHAIC			
6,000		Late		Crude-Notched Point Tradition
7,000			Archaic Tradition Projectile Points	
8,000		Middle		
9,000				
10,000	PALEO-INDIAN	Early		Bifurcate Point Tradition
pre - 10,000				Corner-notched Tradition
			Fluted Projectile Points	Fluted Projectile Points

Paleo-Indian Tradition

At the close of the last continental glaciation when the ice retreated, (by about 13,000 B.P.), grasslands quickly colonized the areas north of Pennsylvania; deciduous forests followed, and the present vegetation zones became established. Paleo-Indian populations probably followed the northward migration of plant communities and herd animals along the East Coast.

Although many archeologists assume that Paleo-Indian tradition cultures engaged only in the hunting of now extinct herd animals, the distributions of Paleo-Indian remains over forested as well as grassland environments in the eastern United States suggests that these groups more probably gained their subsistence by exploiting a variety of resources. Gardner (1974) has investigated a series of Paleo-Indian occupations, called the Flint Run complex, located in the middle Shenandoah Valley of Virginia. These materials (dating between 11,000 and 8,000 B.P.) represent the quarrying of local jasper and river cobbles, tool manufacturing, and habitation activities.

The earliest Paleo-Indian remains are recognized by a distinctive projectile point called the Clovis point. Later in the tradition, several projectile point styles replace the Clovis point, suggesting that through time several adaptations may have developed in local environments.

Paleo-Indian tradition sites have not been reported in the Maryland coastal zone; however, a number of projectile points of this tradition have been found in Maryland and Delaware (Handsman and Borstel 1974, Solecki 1961, Thomas 1974). Coastal oriented sites of this tradition are not expected in the Maryland coastal zone. The Atlantic coast was located east of its present position and the Chesapeake Bay had not yet formed. Only sites related to Paleo-Indian exploitation of coastal plain uplands would be found in what is now the coastal zone; but the Paleo-Indian settlement pattern in the coastal plain is not well enough understood to suggest what kinds of remains might be present and their relative abundance. In addition, sites of that age were probably few and small; and a great deal of time has elapsed during which they could have been destroyed or buried by natural and human agents. Beginning about 10,000 B.P., with the establishment of modern vegetation zones, Paleo-Indian groups were replaced by Archaic Tradition peoples.

Archaic and Broadspear Traditions

Archeologists usually define the Archaic Tradition as prehistoric remains without evidence of pottery or horticulture, while the following Broadspear tradition shows the beginnings of pottery or the use of steatite (soapstone) vessels. The Archaic tradition is usually divided into Early, Middle, and Late segments. None of these segments is very well known in the Maryland coastal plain, although more remains are found of late than of early and middle Archaic. That so few remains are found probably results from the fact that populations were small and dispersed.

The preservation of remains, especially older ones, is poor in this area where there have been few environments with aggrading sediments during the past 12,000 years. Archaic groups probably followed a mobile settlement pattern of hunting and gathering seasonally abundant plant and animal resources.

The Archaic Tradition is known from well documented archeological sequences in several areas, particularly in West Virginia (Broyles 1971) and South Carolina (Coe 1964). In its early stages, the Archaic tradition throughout most eastern states is characterized by stylistically similar projectile points. Late in the tradition, many local styles become differentiated.

Early Archaic projectile point styles are found on the surfaces of many sites along the Potomac River and its interior hinterlands, such as along Zekiah Swamp. These points are identified by referring to the West Virginia and South Carolina prehistoric sequences. A possible Early Archaic Tradition occupation has been found at the Ruppert Island site on the upper Potomac River (McDowell 1972); this site may represent a small camp for mining a local outcrop of vein quartz.

Only one Early Archaic tradition site is known from Maryland's Eastern Shore, although Early and Middle Archaic projectile points are found in many locations. The Chance site, located in Somerset County, has been referred to as the most productive Early Archaic site in Maryland (Cresthull 1971).

In Delaware, Thomas (1974) has found that Middle Archaic tradition sites include interior hunting camps containing evidence of repeated seasonal occupation. These sites have restricted artifact inventories; contemporaneous middle Archaic sites found along the coast and major rivers contain more varied artifacts. Late Archaic sites are found in several microenvironments, suggesting that these groups undertook a wide range of subsistence activities (Thomas 1974).

McNett has defined several Late Archaic tradition archeological cultures for the Potomac River area, including the Piscataway, Vernon, and Holmes cultures, represented at several sites. According to McNett, the settlement pattern contains base camps along the Potomac River with seasonal inland camps, such as those along Zekiah Swamp, for hunting, gathering, and quarrying stone materials. In Kent County, the authors of this study identified a series of late Archaic sites representing the exploitation of both coastal and inland environments.

Beginning about 4,000 B.P., Broadspear tradition cultures appear in the coastal plain from northern Florida to the Northeast. These cultures are recognized by similar tool kits, especially broad-bladed projectile points and steatite or ceramic vessels. These tools may represent a technological advance in adapting to the coastal plain environments, which also may have changed at that time. While Broadspear tradition cultures appear very similar in their early projectile point styles, they too gradually differentiated over time.

Broadspear Tradition sites occur along rivers that empty into the Atlantic Ocean and along estuaries. Turnbaugh (1975) has attempted to explain the development of this culture, which he believes represents a migration of groups from the coastal plain of the Southeast. He suggests that these groups followed a hunting, gathering, shellfishing, and fishing way of life along rich tidal streams and estuaries. The movement northward may have resulted from environmental changes that made northern areas suitable for this subsistence system. Perhaps the slowing rate of sea level rise about 4,000 B.P. enriched these coastal environments by permitting large populations of waterfowl, anadromous fish, and shellfish

to become established. The movement also could have resulted from a technological advance in exploiting these rich resources.

Present in Broadspear Tradition technologies are several kinds of artifacts that could have been used for fish exploitation—broad-bladed projectile points, net weights, spear-thrower weights, and stone roasting platforms. Steatite vessels and ceramics certainly represent an advance in cooking procedures, and there is indirect evidence for the use of canoes. It seems likely that Broadspear Tradition prehistoric cultures represented increased population growth and expansion throughout the coastal plain.

Along the Maryland coastal zone several Broadspear sites have been investigated, including the Marcey Creek site at Potomac Palisades, where spring runs of herring, shad, and sturgeon could have been exploited (McNett & Gardner ms.). In Delaware, Broadspear tradition sites are larger than Archaic sites and contain denser debris. These sites are found along the rivers, with hunting and gathering camps found in inland areas (Thomas 1974). Witthoft (1953) suggests that steatite vessels probably indicate the existence of river travel and that the use of raw materials from other areas, such as steatite, suggests trade.

Woodland Tradition

When ceramics are found in the artifacts inventory of prehistoric cultures, the remains are usually referred to as belonging to the Woodland Tradition. Although the presence of ceramics was earlier taken to mean that horticultural subsistence also must have been present, this inference is no longer automatically made. Indeed, no direct evidence for horticulture in the Middle Atlantic area has been found before 1,000 B.P., although pottery was used since about 3,000 B.P. Even after 1,000 B.P., it is possible that some groups did not adopt horticulture because the resource yield from hunting and gathering in some areas (for example, in the coastal zone) was too high to make horticulture advantageous.

The earliest prehistoric culture in which ceramics have been documented was the Marcey Creek phase. The addition of ceramics has not been demonstrated to signal any dramatic change in the aboriginal lifeway, except perhaps for increasing efficiency of the diversified hunting and gathering economy. Several phases of the Early (3,000 to 2,500 B.P.) and Middle Woodland (2,500 to 1,200 B.P.) periods have been distinguished in the Potomac coastal plain area by McNett (Gardner & McNett 1971; McNett & Gardner ms.). He suggests that the transition area formed by the juncture of fresh and brackish waters was especially important in providing a great variety and number of plant and animal resources. McNett has identified a series of coastal and interior sites that he believes represents winter domestic and shellfish gathering camps, spring fishing camps, and other sites in a seasonal round, including summer freshwater mussel procuring stations and locations for processing plant resources. Fishing sites were located near the Fall Line on the Potomac River.

In the late Middle Woodland (by about 1,500 B.P.), according to McNett (McNett and Gardner ms.) Mockley phase sites show a shift away from the previous extensive use of oysters to smaller sites with fewer and smaller oyster remains. A similar trend toward smaller shell sites is seen along the Severn River (Wright 1973) although this shift takes place slightly later in time. Change is also seen in the upper Eastern Shore, where the authors of the present study have noted that markedly fewer shell middens seem to have been established after about 2,000 B.P.

McNett believes that this change represents the probable addition of corn horticulture to the established hunting and gathering subsistence pattern, although no evidence for horticulture exists until later and then in a different cultural tradition. An alternate explanation for the upper Eastern Shore may be that continuing shoreline erosion caused sand spits to close many small estuaries, rendering many habitats no longer suitable for oyster growth and anadromous fish runs. The degradation of these important resources could have created an imbalance between population and available resources, perhaps requiring movement to remaining environments where oysters and fish continued to prosper. Such a move would have left some areas virtually abandoned and open for occupation by the horticultural groups that later moved into the coastal plain. The presence of competing groups and the resistance to land or resource loss by local inhabitants might help explain the stockaded villages European explorers saw in the coastal plain.

On the Eastern Shore, the authors of the present study have recorded a sequence of coastal shell and interior nonshell sites that span the phase sequence defined for the Potomac River. However, only a few Mockley Phase ceramics and almost no later ceramics, except for Potomac Creek wares, are found.

Little is known of the Late Woodland Townsend culture (1,000 to 300 B.P.) that follows the Mockley phase in the Potomac coastal plain. More is known of Townsend culture prehistory in Delaware, where the subsistence-settlement pattern apparently included the summer coastal exploitation of shellfish, finfish, deer, and plants, while fall-winter exploitation included nut gathering and deer and fowl hunting in the interior. In addition, spring exploitation of anadromous fish along the rivers is postulated.

A new prehistoric culture, Potomac Creek, appears in the Maryland coastal plain not long before European contact, about 800 B.P. McNett (McNett & Gardner ms.) suggests that this culture developed in Piedmont river valleys, including those of the Shenandoah and Potomac, from a prehistoric culture called the Montgomery complex. This complex, beginning about 1,100 B.P., is characterized by large permanent horticultural villages at several sites. Refuse remains include corn, squash, deer and small mammals, fish, and freshwater mussels, showing that the subsistence pattern included both horticulture and the use of seasonally available resources. Sites contain many pits, probably originally dug for food storage but later used for refuse and burials. These sites were surrounded by defense stockades.

In the coastal plain the Potomac Creek culture has been investigated at several sites including Accokeek Creek and Potomac Creek or Patawomeke. Evidence has been found for large stockaded villages with large ossuary or burial pits in which the bones of many people were found. In addition to the villages, at least one camp for procuring shellfish has been found, at Loyola Retreat (McNett & Gardner ms.).

At the time of European contact, both the Potomac Creek horticulturalists and the descendants of the earlier

hunting and gathering groups may have been present in coastal areas, although only the horticultural groups were mentioned by Smith (1907). However, natives of the Maryland coastal plain probably felt the effects of European contact in the form of contagious diseases and movements of other native groups well before actually seeing the Europeans themselves. Thus, remnant hunting and gathering groups may have been destroyed before Smith's voyage of 1612.

Native American Inhabitants at the Time of European Contact

Archeologists derive some information on lifeways from the study of contemporary written accounts made by the Europeans. Such written accounts for the Chesapeake Bay area include reports of English exploration and settlement from about 1584 through 1620. These accounts contain information on native groups including their distributions, interrelationships, and the resources they exploited. Although these accounts are valuable for indicating the nature, location, and distribution of late prehistoric remains, the limitations of these accounts must be considered. The use of these early accounts poses two main problems: the first concerns the extent to which the reported lifeway already may have been altered by earlier European contacts, and the second concerns the difficulties of reports made by people who were not trained to make observations about other cultures.

Accounts of the Roanoke and Jamestown colonies do not represent the first contacts between Europeans and the native inhabitants. Instead, regular contacts began by the early sixteenth century in Canada and shortly thereafter in Florida, spreading European trade goods and diseases throughout the eastern seaboard in advance of the Europeans themselves. Further, the intergroup warfare so extensive at and after European contact may not have been very widespread before European contact stimulated it. Likewise, the importance of agriculture may have increased or declined with the onset of depopulation and instability. In short, it is difficult to measure the reliability of European accounts.

The second problem concerns the reports themselves. Few firsthand accounts exist that describe aspects of native lifeways in details. Also, these reports were seasonally oriented: explorations usually were made during the summer months, resulting in more descriptions of summer activities than of other seasons. Different observers who saw the same group at different seasons may give the impression that two different groups were contacted.

There are further limitations to the accuracy of European observations. Europeans were describing a culture that had some understandable aspects, such as agricultural techniques and village life. Other aspects, such as hunting and gathering techniques and the scheduling of the yearly activities, were less familiar. Again, the resulting accounts report some activities in too little detail and others in too much detail. The plethora of local dialects and the prevalence of internecine warfare confused these untrained observers. Finally, the Europeans who described the new land and its inhabitants were trying to justify their experience to those who remained in Europe; their descriptions frequently exaggerated certain aspects of the new land.

After the English colony was established at Jamestown in 1608, John Smith sailed up the Chesapeake Bay exploring and mapping resources and noting the distribution of native groups according to their strength in fighting men. His description provides information on the contemporary native inhabitants throughout tidewater Virginia and Maryland (see Fig. 3-2). Smith found that Algonquian-speaking groups occupied most of the tidewater area on both the Eastern and Western shores of Chesapeake Bay. He mapped nearly 200 villages, 30 of which he designated by a symbol that stood for king's house or tribal capital (Fig. 3-2). The people lived in permanent villages or towns along the Bay and its tributary rivers, particularly at the intersections of the many waterways.

From the time of the Roanoke colony onward, the English were impressed by the amount of territory held in the tidewater and the number of groups that belonged to the Powhatan Confederacy. This confederacy included approximately 30-36 tribes located on Chesapeake Bay's Western Shore, from the Potomac River south to the James River. Most of these tribes acknowledged the leadership of Powhatan, apparently as a result of conquest (Garrow 1974: 33-44). In addition to periodic fighting among themselves, the Algonquian-speaking groups of the tidewater area fought with Siouan-speaking groups of the Piedmont west of Chesapeake Bay, including the Monacan and Manahoac confederacies, although no changes in territory seem to have resulted from this fighting during early English colonization. The Algonquians also regularly fought bitter wars with the Iroquois-speaking groups, particularly the Susquehannocks and probably the Senecas, who inhabited the Piedmont north of the Chesapeake Bay.

The Iroquois groups, known as Susquehannocks and Massawomekes or Senecas, consisted of permanently settled villages or towns of agricultural peoples living in the river valleys that flowed into the Susquehanna River. Through trade with groups further northward, they obtained brass and copper goods, which originally came from the French explorers and settlers in Canada. Their wars with Chesapeake Bay groups may have been stimulated by population expansion or by the need to establish a new territory because of being pushed southward by other groups, who had in turn been dislocated by the French settlers. As he traveled up Chesapeake Bay, Smith noted that the Patuxent River Algonquians were clustered tightly together and that north of them the area was deserted; both observations are understandable in view of the hostile relations that existed between the Algonquians and the Iroquois to the north. Figure 3-3 presents the general location of the major native groups thought to have inhabited the greater Chesapeake Bay area at the time of English settlement.

Although several scholars have estimated the population density of tidewater Algonquian groups at the time of European contact, the most thorough work is that of Feest (1973), who estimates 14,300 to 22,300 people for the Virginia Algonquian. Mooney (1907) has traced the rapid decline of Powhatan Confederacy groups from an estimated 8,000 to a few family groups in 1705.

Tidewater Algonquian groups lived in small villages or towns always located near the coast, according to Hariot's (1893, 1971) report of the Roanoke area. He described the number of houses per town as being 10 to

Fig. 3-2 John Smith's Map [1612] of the Chesapeake Bay Area

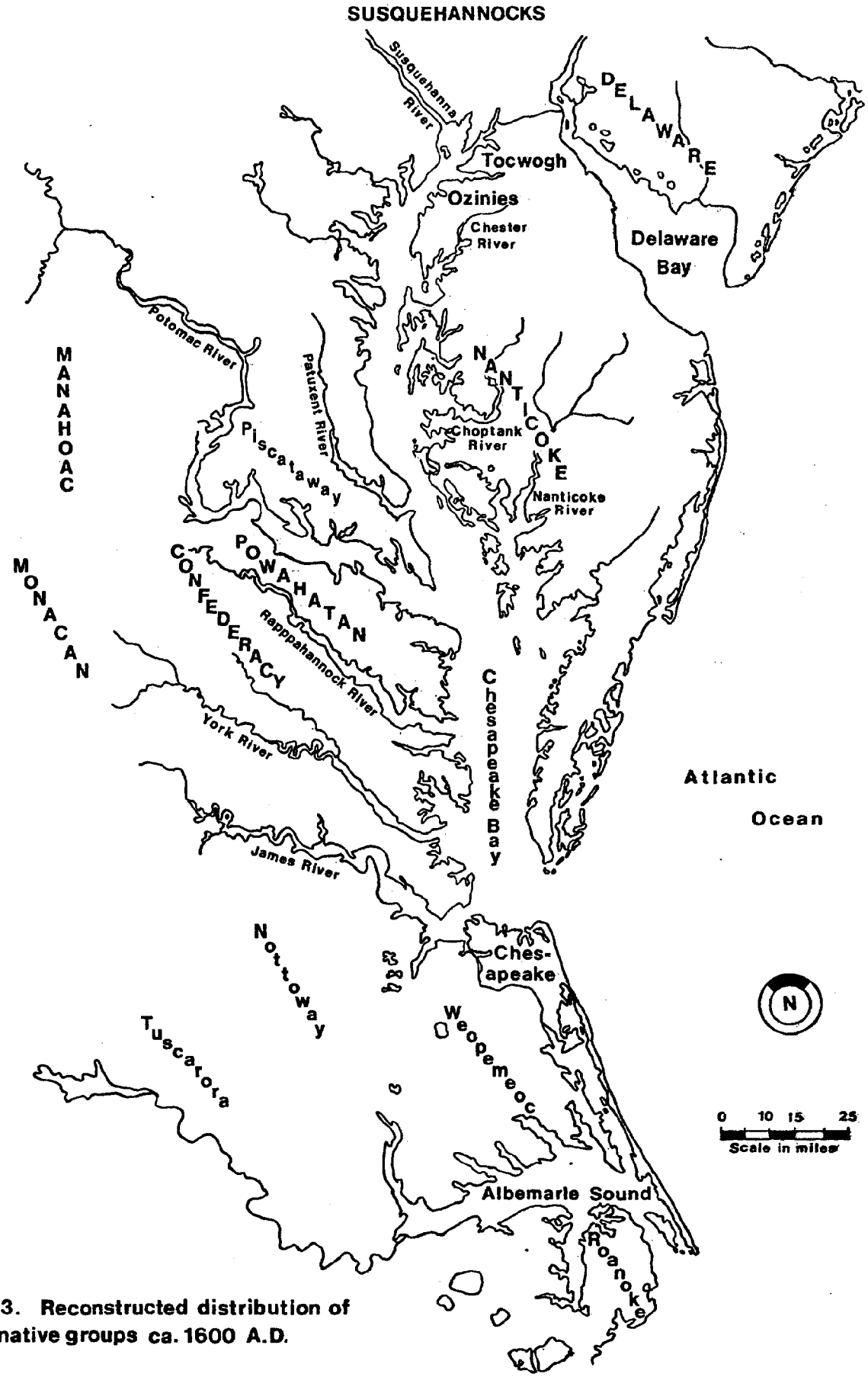


Fig. 3-3. Reconstructed distribution of major native groups ca. 1600 A.D.

12, with some towns having as many as 20 or 30. The houses were constructed of poles covered by bark or mats made of rushes. They were usually 12 to 16 feet long and half that in width. A *wiroance* or chieftain ruled one, sometimes a few towns, and at most 18 (where according to Hariot's report, there were 700 to 800 fighting men). Many local dialects were spoken in these villages.

For Virginia, Smith specified that settlements were found along rivers near fresh springs, with from two to 100 houses together. Fields and gardens surrounding the houses ranged from 20 to 40 and sometimes 100 to 200 acres. Both Hariot and Smith reported that towns were fortified; fortifications are represented on Smith's map of the Chesapeake Bay (Fig. 3-2). Fields and houses were located outside the wooden palisades. The location of settlements along tidewater rivers allowed access to the greatest number and diversity of the area's resources. Upper river areas were used primarily for the seasonal hunting of wild game.

The subsistence pattern of tidewater Algonquian groups consisted of the resources they used throughout the year, the places from which the resources were obtained, and the technology for acquiring and preserving the resources. This information not only aids in understanding the native lifeway at the time of European contact, but also indicates the potential nature, variety, and locations of contact period archeological remains.

In general, tidewater Algonquian groups depended upon a wide variety of wild and domesticated plants and hunted and collected animals. Garrow (1974: 24) enumerates the variety of resources the Powhatans obtained by cultivation, collection, fishing, and hunting, and concludes that although cultivated crops satisfied little more than one-third of the yearly subsistence requirement, the value of crops lay in their reliability as a controlled source of food. Smith (1907: 97) remarked of the Virginia groups that "for neere 3 parts of the yeare, they naturally affordeth from hand to mouth, etc."

In discussing Virginia groups, Smith also noted that the year was divided into five seasons: 1) winter, 2) the budding of spring, 3) the earing of corn, 4) summer, and 5) harvest. During the winter some of the people moved their residences to temporary camps in the "deserts" or deserted areas of upper river drainages. There they participated in individual and communal hunts, using bows and arrows, snares, and drives, in which many deer and other animals, including bear, were taken (Smith 1907). Wintering migratory birds, such as ducks and geese found along the waterways, also were used at this time.

From March through May, overlapping part of the crop-planting season, fishing was also important; herring, shad, gar, and sturgeon filled the streams in migratory runs. That fishing was an important part of Algonquian subsistence is apparent in the variety of devices used, including weirs or traps, canoes, nets, lines, spears, harpoons, and bows and arrows.

Fishing was practiced to a degree and extent that greatly impressed the English settlers, evidenced in their many discussions and illustrations of native fishing techniques.

The planting of crops took place from March through June or July. Cultivated plots 100 to 200 feet square were prepared by removing the bark from near the roots of trees and then scorching the roots with fire (Strachey 1953 and Garrow 1974: 23). At the same time stubble was gathered and burned. Sharpened sticks were used to plant several varieties of squash, passion fruit (maycocks), tobacco, beans, and corn. Until harvest, the crops were weeded and protected from birds and other animals.

Although the gathering of animal and plant foods took place throughout the year, Garrow (1974: 26) states that it was particularly important in spring and summer, the period between harvests when the previous year's store of agricultural products had been exhausted. Many kinds of roots, fruits, nuts, oysters, clams, mussels, birds, eggs, and insects were collected. Shellfish were preserved by smoking, while many plant foods were dried.

Crops were harvested from August to October, and corn was dried or roasted for storage. From harvest time until winter, the greatest variety and amount of food was available, resulting in extensive feasting. When stored supplies were exhausted in late winter, the next annual subsistence round began.

Implications for Prehistoric Resources

Information derived from the known prehistory and ethnohistory of the Maryland coastal zone can give planners a very general idea of the prehistoric resources that could be expected even though this information was not produced for managing these resources. Most importantly, prehistoric resources should be abundant in the coastal zone because of the long period of prehistoric occupation as well as the great number and variety of natural resources available for exploitation.

Second, prehistoric resources would be expected to be varied in many ways including what artifacts and features are present, the size of the areas covered, density of artifacts, and the ages and kinds of activities represented. This variation results from changes in coastal environments, prehistoric activities, and population size during the long period of occupation.

Several generalizations can be made about the nature and preservation of prehistoric remains in the Maryland coastal zone. From the various kinds of remains expected in the Maryland coastal zone, two obvious categories emerge: shell and nonshell (or lithic). Shell sites consist of quantities of oyster shell, *Crassostrea virginica*, along with stone tools and sometimes ceramics. Bone remains may also be preserved in the shell deposits. All of the remains may be stratified in a layer sequence based on age. Nonshell sites consist of stone tools and manufacturing debris and possibly ceramics, usually confined to the top few inches of the soil. Shell sites are typically more visible than nonshell sites.

Several types of shell and nonshell sites would be expected. Because of increased population densities and better preservation, more later than earlier prehistoric sites are expected in the coastal zone. Older sites are important because they are rare.

In locations where the shoreline underwent changes during prehistoric occupation, there may be evidence relating to land use at each stage of environmental development. Prehistoric people either moved to more familiar environments or stayed and changed their activities. For example, Fig. 2-4 shows the stages of coastal geomorphic change in an area. Each setting would have been characterized by prehistoric resources relating to its contemporaneous use as well as to use during earlier stages of development. Such continuous use of a re-

stricted area often produces overlapping or superimposed remains.

Numerous coastal oriented sites can be expected to have functioned as part of complex subsistence systems having more stations located in interior as well as other coastal settings. Thus, sites cannot be understood solely on an individual basis.

The Maryland coastal zone contains unique prehistoric areas and sites. The Potomac, Patuxent, Susquehanna, and Choptank rivers (and their tributaries) probably contain resources that relate to prehistoric communication and trade routes and to population movement into Maryland's coastal zone as well as remain similar to those of the rest of the coastal zone. Zekiah Swamp is a unique area, containing a large number of Archaic Tradition resources, probably hunting camps, along its margins. Finally, the Chance site in Somerset County is uniquely large, very productive Early Archaic tradition site that is now located in the coastal zone because of the rising sea levels.

Differences and changes in prehistoric adaptation are expected to be reflected in the prehistoric resources of the Maryland coastal zone, in the nature of these resources, the size and number of areas they cover, and the interrelationships among ages and activities they represent. Only archeological resources can provide information on prehistoric lifeways before European contact introduced written records. Thus, preserving a representative sample of all kinds and ages of prehistoric resources from the Maryland coastal zone for study and display should be a prime consideration in land use planning.

References Cited

Broyles, B. J.
1971 Second preliminary report: the St. Albans site, Kanawha County, West Virginia. *West Virginia Geological and Economic Survey Report of Archaeological Investigations* 3. Morgantown, West Virginia.

Coe, J. L.
1964 The Formative cultures of the Carolina Piedmont. *Transactions of the American Philosophical Society, New Series,* 54(5). Philadelphia.

Cresthull, P.
1971 Chance (18S05): a major Early Archaic site. *Maryland Archeology* 7(2):31-52.

Feest, C. F.
1973 Seventeenth century Virginia Algonquian population estimates. *Quarterly Bulletin of the Archaeological Society of Virginia* 28(2):65-79.

Gardner, W. M., editor
1974 The Flint Run Paleo-Indian complex: a preliminary report 1971-1973 seasons. *Catholic University of America Archaeology Laboratory Occasional Publication* 1. Washington, D. C.

Gardner, W. M. and C. W. McNett, Jr.
1971 Early pottery in the Potomac. *Proceedings of the Middle Atlantic Archaeological Conference* 1970:42-52.

Garrow, P. H.
1974 An ethnohistorical study of the Powhatan tribes. *The Chesopiean* 12(1-2):1-72.

Handsman, R. G. and C. L. Borstel
1974 An archeological survey of Tuckahoe State Park. Manuscript on file with the Maryland Division of Archeology. Xeroxed.

Hariot, T.
1893 *Narrative of the first English plantation of Virginia.* Reprinted by B. Quaritch, London.
1971 *A brief and true report of the new found land of Virginia.* Reprinted by the De Capo Press, New York.

McDowell, E. E.
1972 The Archaic Stage of the Potomac River Piedmont: a technoecological approach to archeological data. Ph.D. dissertation, American University. University Microfilms, Ann Arbor.

McNett, C. W., Jr. and W. M. Gardner
ms. Archeology in the lower and middle Potomac Piedmont and coastal plain. Manuscript in preparation, Department of Anthropology, American University. Xeroxed.

Mooney, J.
1907 The Powhatan Confederacy, past and present. *American Anthropologist* 9:129-152

Smith, J.
1907 A true relation, by Captain John Smith, 1608. In *Narratives of early Virginia 1606-1625,* edited by L. G. Tyler, pp. 30-118. Charles Scribners, New York.

Solecki, R.
1961 Early man and changing sea levels, Poplar Island, Maryland. *American Antiquity* 27:234-236.

Stephenson, R. L., A. L. L. Ferguson, and H. G. Ferguson
1963 The Accokeek Creek site, a middle Atlantic seaboard culture sequence. *University of Michigan Anthropological Papers* 20. Ann Arbor.

Strachey, W.
1953 *The historie of travaile into Virginia Britania (1612).* Hakluyt Society Publication No. 6. London.

Thomas, R. A.
1974 A brief survey of prehistoric man on the Delmarva Peninsula. Paper prepared for the Delaware Academy of Science.

Turnbaugh, W. A.
1975 Toward an explanation of the broadpoint dispersal in eastern North American prehistory. *Journal of Anthropological Research* 31:51-68.

Witthoft, J.
1953 Broad spearpoints and the Transitional Period cultures in Pennsylvania. *Pennsylvania Archaeologist* 23(1):4-31.

Wright, H. T.
1973 An archeological sequence in the middle Chesapeake region, Maryland. *Maryland Geological Survey Archaeological Studies* 1. Baltimore, Maryland.

For further information on Maryland's prehistoric archeological resources contact:

Division of Archeology
Maryland Geological Survey
Merryman Hall,
Johns Hopkins University
34th and Charles Streets
Baltimore, MD 21218
Phone number: 235-0771

Maryland Historic Trust
21 State Circle
Annapolis, MD 21401
Phone number: 269-2438